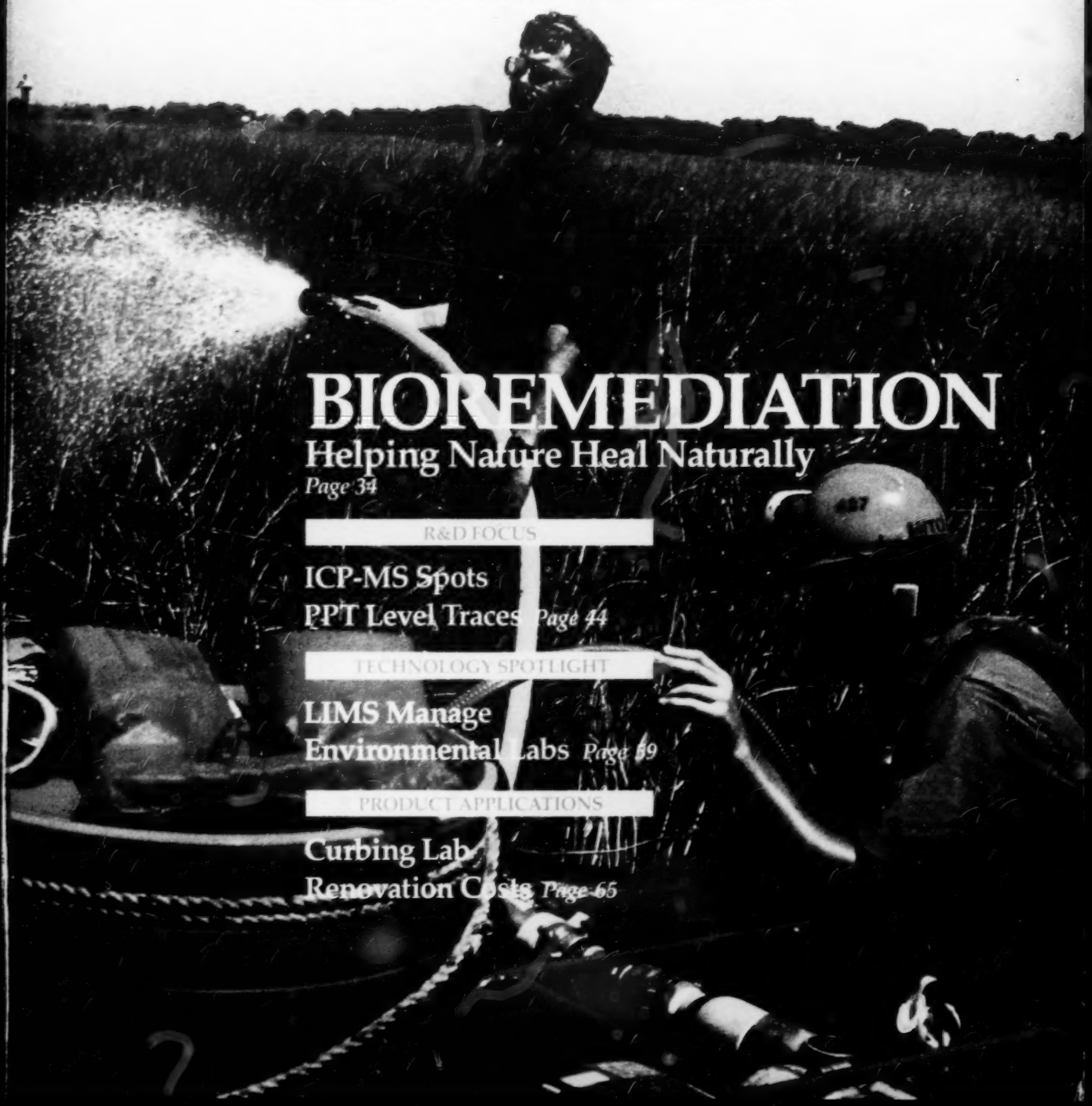
July 1991 A Cahners Publication

R&D



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The International Magazine of Research and Development

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R&D BUSINESS

Survey Reveals R&D Purchasing Patterns

Processes for approving the purchase of capital equipment for R&D laboratories follow very definite patterns, according to a recent survey performed by *R&D Magazine* at the 1991 Pittsburgh Conference on Applied Spectroscopy and Chromatography.

Laboratory capital equipment is generally purchased either as part of a budgeted process, for specific projects, or to replace existing equipment, says Tom Kane, a market researcher for Cahners Publishing, Des Plaines, IL, who organized the survey.

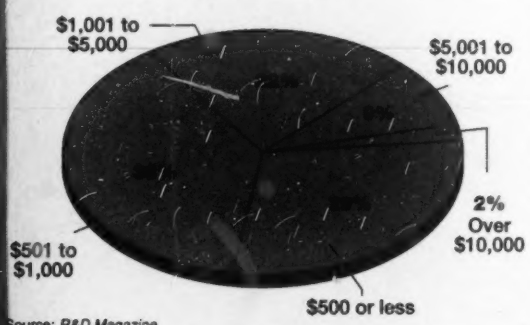
Budgeted purchases, which make up about 75% to 100% of the total capital budget, take the longest time to approve, about three to 12 months. Most of these purchases involve relatively high dollar amounts, generally over $25,000. They also require a formal justification procedure that includes cost, payback, and return on investment. The approval process goes through many levels of management and may require authorization by the chief operating officer of the organization.

Project purchases usually come from a budgeted "slush" fund and can comprise 5% to 25% of the capital budget. Approval for these purchases is faster and less complicated than for budgeted equipment purchases. They generally are purchased by the R&D department, take three to six months to complete, and usually cost less than $10,000.

Replacement purchases for laboratory capital equipment, by their very nature, require the fastest approval and purchasing process, generally taking less than three months. □

How Much Can You Buy Without Your Boss's Approval?

Percent of Respondents by Dollar Limit



Source: *R&D Magazine*

Number of People Involved in Approval	
Organization size	Persons needed for approval
<1,000	3 to 4 (<$7,000)
	5 to 6 ($7,000+)
1,000 +	3 to 4 (<$22,200)
	7 to 8 ($22,200+)

Two-thirds of the researchers polled in an R&D Magazine *survey said they could purchase up to $1,000 without having to get their boss's approval.*

Strong Growth Seen For ICP-MS

Environmental demands are forecast to fuel 10.8% annual growth in inductively coupled plasma mass spectrometers (ICP-MS) bringing sales to $50 million in 1995, according to Strategic Directions Intl., a Los Angeles-based management consulting firm.

ICP-MS instruments are used to detect trace elements in very low sample concentrations. About 40% of the market for these instruments involves environmental testing.

Economic Upturn Sure, But Weak

A textbook example of an economic upturn is unfolding, according to Kermit Baker, an economist at Cahners Economics, Newton, MA. Recent indicators such as falling interest rates, increasing stock market prices, a turnaround in home building starts, and an increase in the consumer confidence index all are classic indicators of an economic expansion.

However, the upturn will be relatively weak, says Baker. Lower consumer spending, a currently stalled consumer confidence level, and a still declining industrial production index are slowing growth.

Because of the U.S. Federal Reserve Bank's cut in the prime discount rate to 5.5%, interest rates are about the lowest they will get in this business cycle. Further interest rate reductions are not likely, due to concerns that they might increase inflation. An improving domestic credit condition and weakening foreign economies, which are slowing foreign borrowing, also limit further rate reductions.

The early signs of an upturn lead Cahners economists to forecast a slight increase of 0.1% in the gross national product for 1991 and a 3.1% increase for 1992. **R&D**

EPA Gives Money for Green Ideas

Small firms are receiving up to $25,000 to develop pollution-prevention approaches as part of the U.S. Environmental Protection Agency's Environmental Risk Reduction Program.

Under a 2% small business set-aside known as Pollution Prevention by and for Small Businesses, small companies are selected to demonstrate their technologies and transfer the information to potential users. This year, 17 of 176 proposals were chosen: seven are recycling techniques and 10 involve source reduction. Research briefs will be distributed to encourage the transfer of successful methods.

A second solicitation for proposals will be announced this summer; applications will be due October 15. Between 13 and 17 proposals will be selected in January 1992 to begin another 12-month project schedule.

For more information: Call Kenneth Stone, Risk Reduction Engineering Research Laboratory, EPA, 513/569-7474. —*Cheryl Pellerin*

DARPA's Reorganization Raises Eyebrows

The Defense Advanced Research Projects Agency (DARPA), the Pentagon's pre-eminent R&D agency, has reorganized to sharpen its focus on technological development. But this may actually make the agency less effective, some observers fear, particularly since the reshuffling follows the ouster of Craig Fields, DARPA's former director.

DARPA provides hundreds of millions of dollars to high-risk, high-payoff technological projects and demonstrated "revolutionary approaches" that may lead to improved weapons systems (see *R&D*, November 1989). "New technical ideas are a DARPA hallmark," is the way Victor Reis, DARPA's present director, summarizes the agency's commitment.

DARPA's restructuring, announced in May, consolidates similar activities that had existed in various offices and creates 10 new offices for programs that have "well-defined customers and products," the agency said.

The new offices include: Advanced Systems Technology, for strategic and tactical military systems; Computing Systems Technology, to work on scalable parallel and distributed heterogeneous computing systems; Defense Science, to identify and develop the most critical emerging technologies in materials, chemistry, electromagnets, and other fields; and Software and Intelligent Systems Technology, to work on machine intelligence and software engineering.

Craig Fields left his post as director in April 1990 after running afoul of Pentagon and White House officials. Fields had been steering DARPA to fund dual-use technology programs—such as high-definition TV systems and advanced semiconductors—that could have commercial as well as military benefits. Congressional observers and others said senior Bush Administration officials had opposed this as the creation of a de facto "industrial policy."

DARPA's Victor Reis

A bipartisan coalition of 11 congressmen blasted Fields's ouster as "a major breach of our future economic security." But Pentagon officials denied that Fields had been fired, only reassigned. Today, Fields is president and CEO of the Austin, TX-based Microelectronics and Computer Technology Corp., a consortium of 21 high-tech firms. Fields could not be reached for comment and previously has declined to discuss what happened.

Raymond Colladay, a former DARPA director who now is a vice president in Martin Marietta's Littleton, CO, office, told *R&D* that Fields "took too high a profile" as far as some people were concerned.

Fields attracted top engineers and technical managers to DARPA and persuaded them to take pay cuts in exchange for the excitement and satisfaction of running leading-edge programs in a relatively hassle-free bureaucratic environment.

"Key to DARPA is the empowerment of these young engineers and scientists," a congressional expert who requested anonymity observed of the reorganization. "You have to get out of their way and let them do their jobs.

"I tend to be nonchalant about how the nameplates change," he added, "but I am worried because those people (who fostered such freedom in DARPA) are out." Fields, he said, "was not one of the boys. He tended to go around people" to get things done.

Current DARPA director Reis declined to talk with *R&D* about changes at the agency. But Jan Walker, a spokeswoman for the agency, said the reorganization would not be noticed by industry.

"The same program managers will manage, and the companies will call the same people as in the past," Walker said. "Internally, folks are simply arranged into different offices."

The reorganization, she added, is intended "to take better advantage of technology and to allow cross-fertilization of technologies with like technologies."

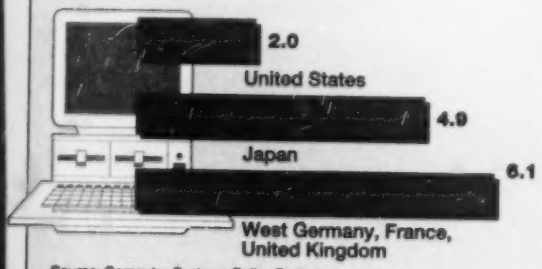
During the last three decades, DARPA-funded projects have led to the development and commercialization of computer time-sharing, advanced aeronautics, new types of composite materials, telecommunications packet-switching, and software for high-speed computing architectures.

At present, the agency is funding innovative programs such as optoelectronics and high-definition displays, high T_c quantum devices, new microelectronics manufacturing technologies, and the exploration of synthetic environments.

DARPA has asked Congress for $1.2 billion in 1992. —*Ted Agres*

U.S. Lags in Budget Share Spent On Computer R&D

(Percent of government R&D budget)



Source: Computer Systems Policy Project

In 1989, the U.S. ranked behind major European competitors and Japan in the portion of the government's R&D budget spent on computer-related R&D. West Germany, France, and the United Kingdom spent an average of 6.1%.

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R&D (ISSN 0746-9179) (GST #123397457), formerly *Research & Development*, is published monthly except semimonthly in February by The Cahners Publishing Company (Subscription includes all issues). Cahners Publishing Company is a Division of Reed Publishing USA, 275 Washington St., Newton, MA 02158-1630. Terrence M. McDermott, President; Frank J. Sibley, Executive Vice President; Charles E. Moodhe, Senior Vice President/General Manager, Chicago Division; Jerry D. Neth, Senior Vice President/Publishing Operations; J.J. Walsh, Senior Vice President/Finance; Thomas J. Dellamaria, Senior Vice President/Production and Manufacturing; Ralph Knupp, Vice President/Human Resources; Donald C. Knapp, Vice President/Publisher.

Circulation records are maintained at Cahners Publishing Company, 44 Cook St., Denver, CO 80206-5800. Phone: 303/388-4511. **Circulation:** More than 120,000 copies distributed. Second-class postage paid at Denver, CO 80206-5800, and at additional mailing offices. **Postmaster: Send address corrections to *R&D Magazine*, P.O. Box 173377, Denver, CO 80217-3377. R&D Magazine** copyright 1991 by Reed Publishing USA; Ronald G. Segel, Chairman and Chief Executive Officer; Robert L. Krakoff, President and Chief Operating Officer; William M. Platt, Senior Vice President.

Subscription rates for nonqualified people: USA, 1 yr $59.95, 2 yr $104.95; Canada, 1 yr $101.60, 2 yr, $203.25 (Canadian rates include 7% goods and services tax.); Mexico, 1 yr $94.95, 2 yr $189.95; all other countries, 1 yr $114.95, 2 yr $214.95; air mail surcharge, 1 yr $65, 2 yr $130. Single copies are available for $15. Product Source is available for $50. Address all subscription mail to **R&D Magazine** 44 Cook St., Denver, CO 80206-5800. Include zip code and, for change of address, copy of old label.

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